

Fatal and non-fatal accidents in hydroelectric plant construction work in Japan in 1999-2022

hydroelectric plant construction work industry Code No.030101

Type of accidents in hydroelectric plant construction work in 1999-2022

Type of accidents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
fall from height	13	9	12	10	7	5	5	3	10	5	5	3	8	3	3	7	5	3	2	6	8	4	6	8	150
falling to same level	8	6	4	6	3	2	3	2	2	1	2	2	2	2			1	7	3	1	1	2	2	2	64
crash	3	2		1	1		1		1	1	3		1	2					2	3					21
struck by flying or falling object	6	5	3	4	3	5	5	3	4	3	1			3	1	4	2	2	2		2	2	3	1	64
collapse	2	2	4	1	2		2			2	2	1		1	3		1	1	1	1	1				27
crashed by	3	2	3	4		2	2	1	2	2	5	3	4		1	3	3		1		2	1	2	5	51
caught in/between	6	4	5	6	4	5	5	6	2	5	6	2	5	2	3	3	5	4	3	5	5	7	4	5	107
cut	1		4	3			2	1	1	2	1	1				1	1	1				2	1		22
injury to the sole of the foot		1	1																						2
drown						1					1		1			1				1					5
contact to high/low-			1							1	1			1							1		1	1	8

temperature																									
contact to harmful substance		1			1			2				1				1					1				7
electric shock			1																						1
explosion																									
burst																									
fire																									
traffic accident (public road)	2		1	1	1			3	2	2	2	4	2	3		1	1	1		1	1		2	1	31
traffic accident (others)													1												1
reaction to motion/improper motion			1		1	2	1		1	2	1				1	1	2			3		1	1		18
others		1		1		1		1									1			2	2	12	1		22
unclassifiable																									
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	23	601

Causal agents (large) of fatal and non-fatal accidents in hydroelectric plant construction work in 1999-2022

Causal (L) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
machine	9	5	11	6	7	3	6	5	2	5	7	5	3	3	1	5	2	6	2	1	2	4	1	6	107

crane, conveying machine	6	7	4	5	4	2	3	5	8	6	8	4	10	5		4	6	2	2	6	9	5	8	6	125
other equipment	7	5	5	7	2	5	1	3	2	5	1		4		2	3	1	2	4	3	1	5	5	3	76
temporary buildings, establishments	14	8	11	9	5	7	7	3	6	3	6	2	4	7	1	5	3	6	3	7	2	3	5	5	132
substance, material	3	6	2	5	3	3	5	4	2		2			1	4	2	5	1	1	2	4	2			57
load	1			1			1	1	1		1		1		1			1	1						10
environment	4	1	6	3	1	2	3	1	4	6	4	6	2	1	2	1	3	2	1	1	3	2	2	2	63
others		1	1	1	1	1				1	1		1		1	1	2			2	1	2	13	1	31
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	23	601

Causal agents (middle) of fatal and non-fatal accidents in hydroelectric plant construction work in 1999-2022

Causal (M) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total	
engine																										
power transmission mechanism			1							1																2
woodworking machine	1		3	1				1			1	1											2	1		11

hauling equipment			1				1	1															3		
human power machine																									
hand tool						1			1			1								1			4		
ladder				1			1					2		2	1	1		1	2	1		2	1	15	
slinging tool			2				1		1			1					2	1			1		9		
other tools			1						1						1		2	1			1	1	1	9	
other equipment, facilities					1				1	1					1						1	1		6	
scaffolding			3		1				2				2		1	2	1	1	2		1	3	1	20	
timbering						1		2																3	
stairs, landing stage			2								1	1	1		1		1	1	1				1	10	
opening						1							1	1	1									4	
roof, beam, haze, crossbeam, principal rafter																1								1	
working platform, boot board			1		1						1					1								4	
passage			3				2	1	2	2				1				2	1	1		1		2	18
building, establishment			1		3		2	1			4		2	1		1			2	2		2	1	22	

other temporary buildings, establishments			1			1	1		1	2		1	1			2		1		1			12	
explosive substance																								
inflammable substance																								
inflammable gas																								
harmful substance							2								1								3	
radiation																								
other hazards, harmful substances					1															1			2	
metal material			1		1		4	1	2		1			2	1	3	1	1	1	2	1		22	
lumber, bamboo						1				1								1	2				5	
stone, sand, substance			1		1			1					1			1							5	
other materials													2	1									3	
load							1	1		1		1		1			1	1					7	
machine/equipment as load						1																	1	
natural ground, rock			5		1		1		3	6	1	2		1	2	1	3	1		1	1		1	30
standing tree						1				1	2							1				1	6	

water													1							1	1					3
abnormal environment												1														1
high/cold temperature environment			1										1										1			3
other environments							1	1	1		2	1						1			1	1		1	10	
other causal agent																						2	12	1	15	
no causal agent			1		1					1	1				1	1	1			2	1		1		11	
unclassifiable													1				1								2	
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	23	601	

Workers age of fatal and non-fatal accidents in hydroelectric plant construction work in 1999-2022

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
19 years old or less	2		1		1		1	1			1		1								1		1		10
20-29	7	4	8	8	6	2	3	2	2	5	2	3	3	2	3		1	4			4	7	5	2	83
30-39	3	7	4	7		4	4	2	5	11	9	2	4	2	4	3	3	2	4	7	2	1	5	3	98
40-49	8	7	9	5	3	6	5	5	2	2	7	3	5	5	1	6	1	1	5	6	4	4	10	4	114
50-59	13	10	13	13	9	10	8	7	10	3	4	4	6	6	2	4	7	8	1	4	5	6	9	5	167
60 years old or	11	5	5	4	4	1	5	5	6	5	7	5	6	2	2	8	10	5	4	5	6	5	4	9	129

more																									
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	23	601

Workers' number of workplace of fatal and non-fatal accidents in hydroelectric plant construction work in 1999-2022

Workers scale	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
9 workers or less	11	15	10	13	10	11	14	10	7	12	11	8	6	4	6	11	9	7	10	12	10	8	15	10	240
10-29	19	11	19	15	8	6	8	6	12	9	13	8	12	8	4	7	6	5	3	8	11	8	8	7	221
30-49	4	5	6	1	1	2	1	4	5	1	4	1	3	2	2	1	5	6	1	1	1	3	7	2	69
50-99	3	2	3	5	3	3	2		1	1	1		3	3		2	2	1		1		2	2	3	43
100-299	6		2	2	1	1	1	2		1	1		1					1				1	2	1	23
300 workers or more	1			1						2												1			5
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	23	601

Month of fatal and non-fatal accidents in hydroelectric plant construction work in 1999-2022

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
January	2	3	2	3	2	1	2	3		1	6		1	3		3	2	3	3	3	2		4	2	51
February		4	3	6	1	2	2		2	2	5			3	1	1	1	2	1	1	2	3	2	1	45
March	12	3	1	3	1	1	4		3	3	1	1	4	1	2	2	3	1		2	3	2	1	1	55
April	4		3	2	5		2	1	2	1	3	5					1	4	1	2	4	1	1		42

May	4	4	5	3	1	3		5	2	2	1	2	3		3	5	1	1			1	1		1	48
June	4	1	2	4	1	3	3	1	1	2	1	1			2		2				2	1	3	1	35
July	3	3	4	1		4	1	1		2	1	2	3	3		1	3	1		1	3	4	1	3	45
August		4	2	3	2	1	3	1	2	1	2		4		1	2	1	1	3	2	2	1	13	2	53
September	5	3	7	5	2	1		2	1	3	3		2	4	1	1	3	3	1	2	1	1	5		56
October	4	2	6		4	4	5	3	4	5	1	2	3	2		5	1	2	3	2	1	4	1	3	67
November	4	3	1	6	2	2	2	2	3	4	2	1	1	1	2	1	2	2		3	1	3	2	5	55
December	2	3	4	1	2	1	2	3	5		4	3	4				2		2	4		2	1	4	49
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	23	601

Prefecture of fatal and non-fatal accidents in hydroelectric plant construction work in 1999-2022

Prefecture	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
Hokkaido	9	2	5		1		4		1	5	2	1	3	3	2	1	1	4	1	2		1	2	1	51
Aomori	2							1	1		1	1		1	1		1		1			2		2	14
Iwate	1	1	1					2		3	1			1				2		1				1	14
Miyagi	1						1	1			2	4								2		2	1		14
Akita					2		1	4												2	1	1	11	1	23
Yamagata			1		4		1	3	1	1											2		2		15
Fukushima	2	1	3						4	1	1		1	1	1	1	1			1	1		1		20
Ibaraki		1			1		1				2										2			1	8

Nara					2						1	1					1		1			2		8	
Wakayama		1			1										1									3	
Tottori	1		1									1	1											4	
Shimane										1									1			1		3	
Okayama		3	2		1					2										1				9	
Hiroshima	1		1						1	2						1		2	1					9	
Yamaguchi		1	1		1				1				1							1	1			7	
Tokushima										1	2						2			1				6	
Kagawa	2	1	1										1					1			1			7	
Ehime	1											1			1					1				4	
Kochi							2		2	1	2					1								8	
Fukuoka	3		1							1	1		3	2		1	1	3						16	
Saga		1					1	1			1	1											1	6	
Nagasaki								1								1								2	
Kumamoto	1		2					1		1		1	1	1			2	1	1	1		1		14	
Oita	2	1			1					3	1						1		1	1	2	5	2	2	22
Miyazaki	1	3	3		2								2												11
Kagoshima	1		1										3		1	1	3				1	1	1	2	15
Okinawa		1					1																		2
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	23	601

unclassifiable																									
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				3	26

Causal agents (large) of fatal accidents in hydroelectric plant construction work in 1999-2022

Causal (L) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
machine													1			1		1							3
crane, conveying machine	1							1				1	1				1	1							6
other equipment																								1	1
temporary buildings, establishments						2						1	1	1	1	1	1			1				2	11
substance, material															1										1
load																									
environment		1			1					1										1					4
others																									
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				3	26

Causal agents (middle) of fatal accidents in hydroelectric plant construction work in 1999-2022

equipment																									
kiln, caldron																									
electric equipment																									
human power machine, tools																									
tools																								1	1
other equipments, facilities																									
temporary buildings, establishments					2					1	1	1	1	1	1				1				2	11	
hazards, harmful substances																									
materials														1											1
load																									
natural environment		1			1					1										1					4
other causal agent																									
no causal agent																									
unclassifiable																									
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				3	26

other materials																									
load																									
machine/equipment as load																									
natural ground, rock		1			1					1														3	
standing tree																									
water																			1					1	
abnormal environment																									
high/cold temperature environment																									
other environments																									
other causal agent																									
no causal agent																									
unclassifiable																									
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				3	26

Workers age of fatal accidents in hydroelectric plant construction work in 1999-2022

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
-----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

19 years old or less												1												1
20-29					1									1										2
30-39																	1		1					2
40-49	1	1							1		1	1	1		2				1				1	10
50-59					1		1					1		1		2							1	7
60 years old or more					1						1							1					1	4
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2			3	26

Workers' number of workplace of fatal accidents in hydroelectric plant construction work in 1999-2022

Workers scale	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
9 workers or less					1	1				1		1	1		1	2	2			2					12
10-29	1					1		1			1				1									1	6
30-49		1												1				2							4
50-99													1												1
100-299													1											1	2
300 workers or more																								1	1
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				3	26

Aomori																								
Iwate									1															1
Miyagi										1														1
Akita																								
Yamagata																								
Fukushima	1																							1
Ibaraki																								
Tochigi																								
Gunma																							1	1
Saitama		1																						1
Chiba																								
Tokyo																								
Kanagawa																								
Niigata														2			1						1	4
Toyama												1			1	1								3
Ishikawa																								
Fukui																								
Yamanashi																								
Nagano																								
Gifu												1					1							2
Shizuoka								1								1								2

Kumamoto											1													1	
Oita																									
Miyazaki					1																			1	
Kagoshima																									
Okinawa																									
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				3	26

Data sources: <https://anzeninfo.mhlw.go.jp/user/anzen/tok/anst00.html> (MHLW, Japan)

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